

What is claimed is:

1. A plating apparatus comprising:

a plating unit having a plating bath for holding a plating liquid therein;

a plating liquid monitoring unit having a liquid chromatography device for separating and quantifying an additive in a sample of the plating liquid, and an arithmetical unit for comparing a quantified value of said additive with a given concentration predetermined for said additive and producing an output signal representing the compared result; and

an additive replenishing unit for adding a solution including said additive from an additive tank to the plating liquid in said plating bath based on said output signal from said arithmetical unit in said plating liquid monitoring unit.

2. A plating apparatus according to claim 1, wherein said liquid chromatography device comprises an evaporative light-scattering detector for quantifying said additive.

3. A plating apparatus according to claim 1, wherein said plating liquid comprises a sulfuric acid copper plating liquid for embedding copper in a fine recess defined in a substrate to form an interconnection; and

ionic components are removed from said plating liquid in advance before said additive is quantified.

4. A plating apparatus according to claim 1, wherein said additive comprises at least one of an oxygen-containing water-soluble polymeric compound, a sulfur-containing organic compound, and a nitrogen-containing organic compound.